Clinical Correlations – Anatomy Exam 2

**Hydrocele**  - Excess fluid in a persistent process vaginalis (normally becomes tunica vaginalis) either in the cord or the testis

**Hematocele –** Blood accumulation in the saccus (tunica) vaginalis due to the rupture of an artery or vein

**Direct hernia –** Travels through the posterior wall of the inguinal canal; covered by one or two layers of the spermatic cord; usually occurs in men over 40 y/o

**Indirect hernia -**  Travels through the deep inguinal ring; covered by all 3 layers of spermatic cord; more common in children

**Portal hypertension –** Occurs when portal circulation through the liver is obstructed; may be caused by cirrhosis or a tumor; pressure increases in the portal vein causing blood to be shunted to the system resulting in varicosities

*Esophageal varices* – Left gastric (portal) and esophageal branches to azygos (systemic)

*Anorectal varices* – Superior rectal branch of IM (portal) and middle and inferior rectal to internal iliac (systemic)

*Caput Medusae* – Paraumbilical (in falciform lig.) and superficial branches of superior and inferior epigastric

*Retroperitoneal varices (veins of Retzius)* – colic, duodenal, pancreatic and lumbar, renal

**Hiatal hernia-** Protrusion of a portion of the stomach through the esophageal hiatus due to a dysfunctional lower esophageal sphincter or a loose phrenicoesophageal ligament

**Pyrosis –** Regurgitation of food and acid above the Z-line of the esophagus, eroding the esophageal mucosa (GERD often associated with a hiatal hernia)

**Achalasia –** Too much muscle tone at the lower esophageal sphincter resulting in dysphasia (difficulty swallowing)

**Borborygmi –** gurgling or rumbling of stomach caused by the contraction of the muscles of the stomach

**Arteriomesenteric Occlusion of Duodenum** – the horizontal duodenum (3rd part) is occluded by the superior mesenteric artery and the left renal vein; the patient will usually be tall, frail, weak, and slender with flaccid abdominal mm.; after eating the pt will become nauseous and will vomit because the food can’t move forward; the TX is to work out to build up abdominal mm., to eat smaller amounts, and to lay down after eating

**Duodenal ulcers –** the most common type of peptic ulcer; usually caused by *Heloicobacter pylori*, a bacteria that grows in an acidic environment; the TX is antibiotics; if Un-TX the ulcers may continue to erode until they perforate the wall and luminal contents will leak into the peritoneal cavity (into hepatorenal recess)

**Intussusception –** Telescoping of a loop of small intestine into an adjacent section; it interferes with the blood supply of the wall so you will get swelling and close down the lumen; the wall may also become compromised; the TX is to pull out the telescoping with surgery

**Volvulus –** Twisting of a loop of small intestine to such an extent that blood flow through the mesentery (remember the mesentery contains the blood vessels) is obstructed, causing an infarction and necrosis of the section

**Diverticula –** outpocketins in the mucosal wall of the large intestine

**Diverticulosis ­**– inflammation of the diverticula

**Cholecystitis -**  Inflammation of the gallbladder; typically caused by the bile flow being obstructed by a gall stone (cholelith)

*Murphy’s sign –* Put your fingers on the gallbladder, the pt will experience pain upon inspiration

*Cholecystectomy –* surgical removal of a gallbladder

*Duct of Luschka –* an accessory bile duct present in 33% of the population; often located in the bed of the gallbladder – if not ligated, can leak bile after cholecystectomy causing bile peritonitis 5-7 days post-op

**Rovsing’s sign** – Test for appendicitis; put pressure on the LLQ and it causes pain in the RLQ

**Pancreatitis –** inflammation of the pancreas; can lead to activation of digestive enzymes and auto-digestion (increased risk for alcoholics)

**Pancreatic cancer –** usually diagnosed late; Sx – pain, weight loss, jaundice (because block the bile duct and increase bilirubin in the blood); usually located in the head of the pancreas due to the absence of digestive enzymes; 6 month survival if metastasized

**Stab wound at 9th IC space near midaxillary line -** causes rupture of the spleen and pneumothorax

**Rupture of the spleen –** A blow to the spleen can cause a hematoma to form that expands the spleen until the capsule ruptures, causing sudden and massive bleeding into the peritoneal cavity; if the spleen is removed the filtering is taken over by the liver and bone marrow

**Kehr’s sign -**  acute severe pain in the left shoulder caused by blood in the peritoneal cavity irritating the peritoneum of the diaphragm (phrenic nerve); pain referred to the region supplied by the supraclavicular neve

**Hirschsprung’s Disease -**  Aganglionic megacolon (absence of Auerbach’s and Meissner’s plexi in the wall of the colon); typically occurs at the distal end of the GI tract; shows up in the first few years of life – Tx is to remove the aganglionic portion surgically

**Esophageal atresia –** blind end; incomplete, leading to polyhydraminos (excess amniotic fluid because the fetus normally swallows then absorbs the fluid going from the dig. tract to the blood to the placenta to the mother). When fed, these infants swallow normally but begin to cough and struggle as the fluid returns through the nose and mouth. The infant may become and may stop breathing as the overflow of fluid from the blind pouch is aspirated into the trachea.

**Esophageal stenosis –** narrowing of the lumen

**Congenital short esophagus (congenital hiatal hernia) –** the esophagus doesn’t lengthen the way it should so the stomach is pulled up through the esophageal hiatus into the thoracic cavity

**Anular pancreas –** pancreas encircles the duodenum; if loose there is no problem; if it’s tight due to inflammation (such as pancreatitis) it will constrict the duodenum and cause vomiting

**Abnormalities of the midgut (malrotation) –** see diagrams page 84

**Omphalocele –** failure of a portion of the intestines to return to the abdominal cavity during week 10 (stays in the umbilical cord); herniated mass is surrounded by the epithelium of the umbilical cord

**Gastroschisis –** A hernia of the abdominal viscera through the lateral wall of the abdomen due to a defect in the closure of the lateral folds during week 4 when the lateral folds are formed; nothing covers the herniated viscera

**Umbilical hernia –** Develops after the successful return of the intestine to the abdominal cavity due to a defect in the closure of the umbilicus; herniated mass is surrounded by skin

**Internal hernia –** Loop of small intestine is pushing into the mesentery of the midgut loop

**Ilieal Diverticulum –** see page 86 for diagrams

**Cystic duplication of the small intestines -**  see page 86 for diagrams

**Anorectal abnormalities –** see page 90 for diagrams

**Psoas sign –** A positive test causes pain when extending the thigh; test for appendicitis;  pain results because the psoas borders the peritoneal cavity, so extension of the muscles causes friction against nearby inflamed tissues; in particular, the right iliopsoas muscle lies under the appendix when the patient is supine

**Psoas abscess –** also indicated by a positive psoas sign; an abscess caused by lumbar tuberculosis

**Bochdalek hernia** – Most common type of congenital diaphragmatic hernia; occur on the left posterior aspect of the diaphragm; caused by a failure of the pleuroperitoneal membrane to fuse with the septum transversum (allow abdominal organs such as stomach and intestines into the thoracic area)

**Morgagni hernia –** occurs in the parasternal region of the diaphragm due to a failure of a small part of the muscular diaphragm to form; small hernia immediately adjacent to the xiphoid (in Morgagni foramen) usually on the right side

**Hiccups -**  caused by irritation of the phrenic nerve

**Lesion of a phrenic neve -**  Paralysis of hemidiaphragm; causes paradoxical movement of the deinnervated hemidiaphragm

**Aortic aneurysm –** pulsates; if ruptures 90% mortality rate; can be caused by falling from great heights because the pressure builds up

**Renal vein entrapment (Nutcracker Syndrome) –** superior mesenteric artery and the aorta – gap where the vein travels; restriction = backup so you get no blood flow to the IVC; Sx – hematuria, abdominal pain, pain at the L testis, pain at LLQ in females

**Renal and Ureteric Calculi (kidney stones) –** loin to groin pain (T11-L2 innervation of the ureter (sympathetic afferent); stones greater than 3-4 mm get trapped; three places for the narrowing to occur: 1. Just after the pelvis 2. At the narrowing of the pelvis and 3. At the wall of the bladder

**Hepatitis (A, B, C, D, E) –** Hep C is the most common and dangerous blood borne infection; infection and inflammation results in destruction of hepatocytes which are replaced by scar tissue; Sx – fatigue, decreased appetite, weakness, nausea, joint and muscle pain 🡪 fibrosis of liver; Tx – controlled by anti-viral drugs

**Cirrhosis –** chronic disease of the liver; fibrosis following hepatocyte damage; associated with alcoholism, chronic hepatitis, and bile obstruction; drainage of blood and bile are disrupted resulting in (SX) jaundice, portal hypertension, esophageal varices, GI bleeding, anemia, and hepatic coma

**Wilson’s disease –** autosomal recessive causing copper to accumulate in the liver, brain, cornea, and kidneys

**Hemochromatosis –** inherited disease of iron overload; Sx are joint pain, fatigue, and abdominal pain, Tx is phlebotomy

**Liver function tests –** increased with liver damage are AST, ALT, bilirubin, and PT/PTT; decreased is plasma albumin

**Liver failure –** damage to liver resulting in reduced protein synthesis, reduced metabolic detoxification, and decreased bile secretion

**Incontinence –** lack of voluntary control of mictuation due to nerve injury, bladder irritation (infection) and trauma to sphincter

**Retention –** is the failure to completely void urine in bladder

**Hydronephrosis –** increased urine pressure in ureter and renal pelvis due to blockage; causes dilation of renal pelvis and pressure backup through the collecting ducts and nephrons damages nephrons

**UTI**

*Urethritis* – consists of urethra infection

*Cystitis –* infection of bladder, more common in females

*Pyelonephritis –* inflammation of the renal pelvis

**Renal agenesis**

*Unilateral* lack of kidney; probably due to lack of uteric bud; usually no Sx due to compensatory hypertrophy of remaining kidney

*Bilateral* – no kidney forms 🡪 fatal; due to failure of the ureteric bud or metanephric blastema to form; no excretion of urine into the amniotic sac; associated with Potter’s syndrome

**Pelvic Kidney** – failure of kidney to ascend; most ectopic kidneys are located in pelvis

**Divided kidney with bifid ureter –** due to incomplete division of the ureteric bud; has 2 ureters from 2 kidney that fuse; have two renal pelves

**Discoid kidney (pancake) –** both kidneys fail to ascend and fuse together in the pelvis; BVs come from the area

**Horseshoe kidney -**  U-shaped kidney in the pelvis; inferior poles are fused together; kidney starts to ascend but then gets held up by the inferior mesenteric artery

**Supernumerary kidney –** have extra kidney on one side with two ureters; two ureteric buds instead of one form early in development (each had a separate blastema)

**Malrotation –** hilum remains anteriorally directed or hilum rotates laterally; usually associated with ectopic kidneys

**Unilateral fused kidney -**  Kidneys fuse together in pelvis prior to ascending; one ureter crosses the midline

**Multicystic Dysplastic Kidney (MCDK) –** numerous cysts throughout the kidney; one of the most common genetic diseases; also affects the cilium (becomes non-functional) which normally detects movement of fluid through the tubules, so epithelial cells divide profusely and form the cysts

*ADPKD –* gene PDK-1 affected, presents later in life (4th – 5th decade)

*ARPDK -*  gene PDK-2 affected, presents in childhood

**Genu valgum –** knock knee caused by coxa vara

**Genu varum –** bow leg caused by coxa valga

**Abnormal development of the uterus -**  see page 372 for pictures

**Hypospadias -**  most common abnormality of the penis; characterized by opening of the external urethral orifice onto the ventral surface of the penis; results from the failure of the urogenital folds to fuse in the midline

*Glans hypospadias –* external urethral opening at base of glands

*Penile hypospadias -*  external urethral opening anywhere along shaft of penis

*Penoscrotal hypospadias –* external urethral orifice at junction between penis and scrotum

*Perineal hypospadias –* external urethral orifice includes scrotum and length of penile shaft; severe cases may be diagnosed as male pseudohermaphrodite because begin to look like labia majora

**Abnormalities of descent**

*Persistent process vaginalis –* PV fails to close; predisposes congenital inguinal hernia caused by loop of bowl entering into the PV

*Hydrocele of spermatic cord –* middle portion of processus in scrotum remains open; secretion create a fluid filled cyst

*Hydrocele of testis –* lower end of processus remains open and dilates around testis; fluid fills the hydrocele from the peritoneum

**Cryptorchidism –** failure of the testis to descend into the scrotum; can be held up anywhere along the path of descent but usually in the inguinal canal; sterility results if remain undescended

**Abnormalities of Sexual Differentiation**

*True Hermaphrodites -*  have both ovarian and testicular tissue in the same or opposite gonads; have Barr bodies

*Female Pseudohermaphrodite –* Have Barr bodies; genetically female; have ovaries with ambiguous genitalia; caused by excessive amounts of androgens (CAH)

*Male Pseudohermpahrodites –* Lack Barr bodies; genetically male but have testis with variable degrees of development of external genitalia; caused by low levels of testosterone and MIS synthesis by fetal testis (so persistence of paramesonephric structures)

*Androgen Insensitivity Syndrome –* testicular feminization syndrome; are chromatin negative; genetically male but characterized with female external genitalia; cause is from defect in androgen receptors; oviducts, uterus, and upper vagina missing due to secretion of MIS by testis

**Ortolani’s Sign –** for congenital hip dysplasia; (+) sign “clunk” from reducing a posterior dislocation

**Landing injuries –** PCL tear